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# Appendix 1: Step I Data Sources

## Individual Databases:

As mentioned previously, internet resources are available that accumulate information from many of the Step I lists into a single site. These sites may make a Step I evaluation easier for QCAT users. Detailed information on how to access each of these sites and obtain data that can be used in a QCAT evaluation can be found later in this appendix. The two sites of potential interest to QCAT users are:

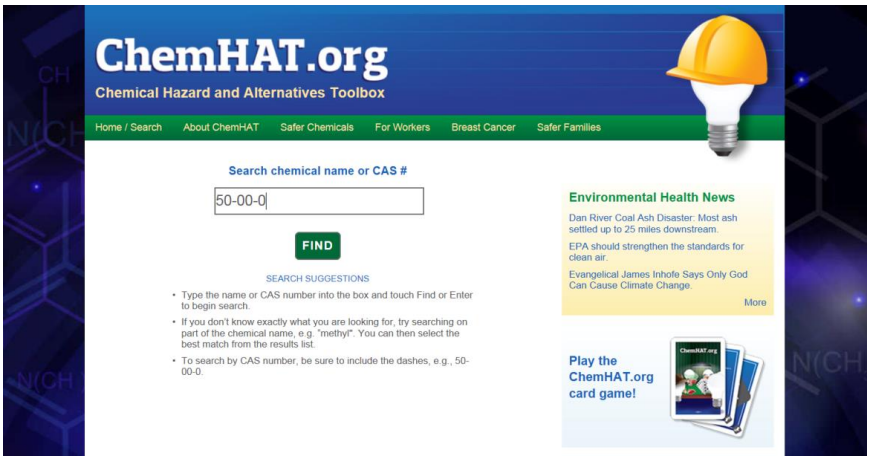
1. The IUE-CWA, the Industrial Division of the Communications Workers of America's and the BlueGreen Alliance (BGA)'s Chemical and Hazard Alternatives Toolbox, ChemHAT.
2. Healthy Building Network's Pharos Database's Chemical and Material Library.

**Please note:**
These appendices are updated frequently and may be outdated. Updated versions are available on the QCAT website at www.ecy.wa.gov/GreenChemistry/QCAT.html. Go to the website and check the dates to make sure you are using the most current version.

Users should check when the information on these websites was last updated. Any site that is several years out-of-date should be used with caution. However, if a chemical was identified as a problem in one of the lists included in these sites, the chemical should be avoided and removed as a potential safer alternative.

## ChemHAT (Chemical and Hazard Alternatives Toolbox):

ChemHAT is a free site created by the Industrial Division of the Communications Workers of America and the BlueGreen Alliance (BGA). ChemHAT provides recommendations and identifies concerns for specific chemicals within its database. However, the data used for these recommendations are most of the same lists used in a Step I QCAT assessment. As ChemHAT is freely available to all users, it is a great source of authoritative lists and saves the assessor considerable time by providing most of the lists in one locate. Assessors can access ChemHAT through its main page:



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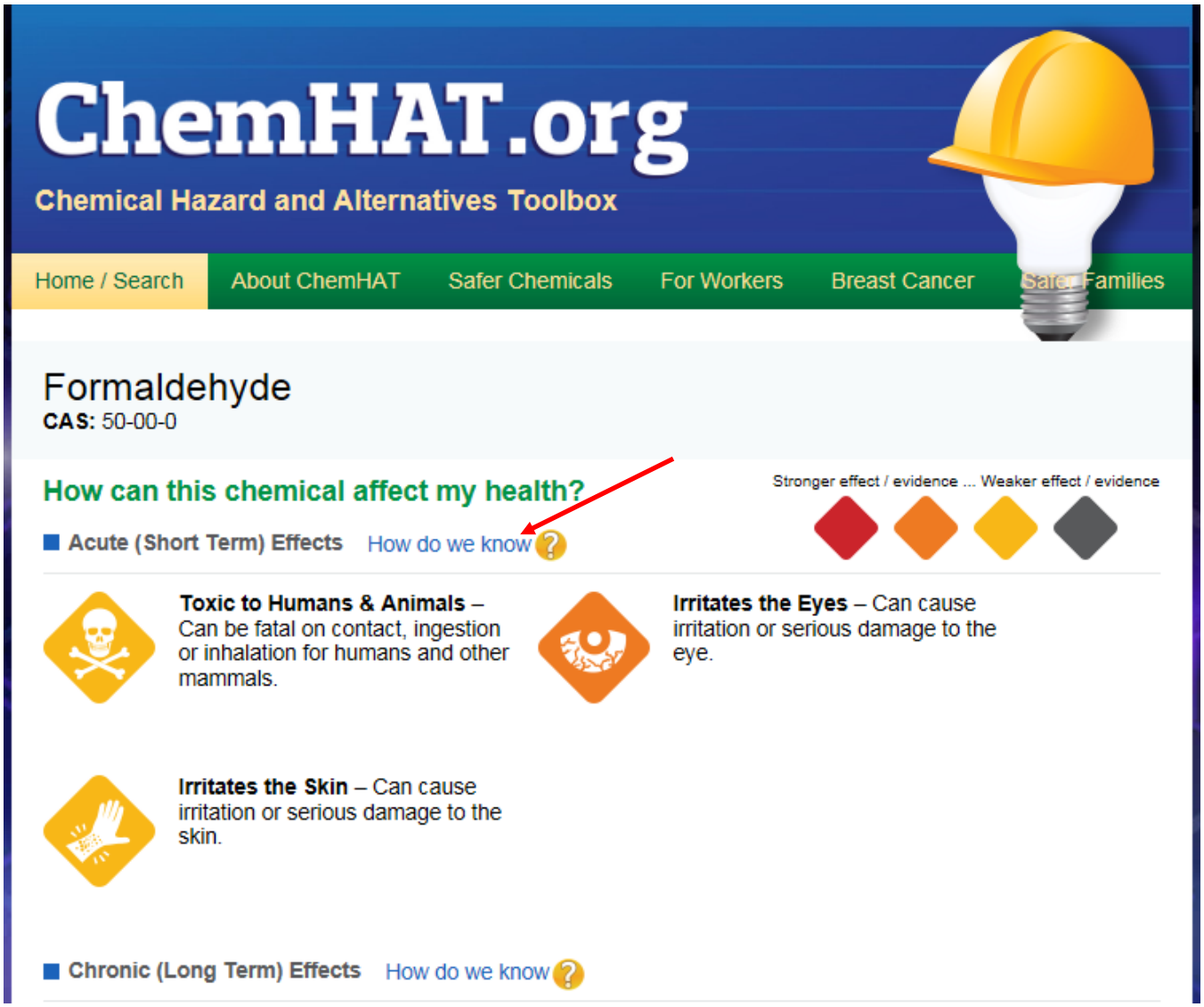
The assessor can enter either the chemical name or the CAS number for the chemical of interest. The formaldehyde CAS number, 50-00-0, is used to demonstrate the availability of information within ChemHAT. Once the assessor clicks on the 'Find' button, the following page appears:




ChemHAT displays information on how the chemical can affect health. In the above screen capture, acute and chronic concerns are identified. If the assessor clicks on the blue highlighted information 'How do we know' in the Acute (Short Term) Effects category (red arrow above), the following information appears:

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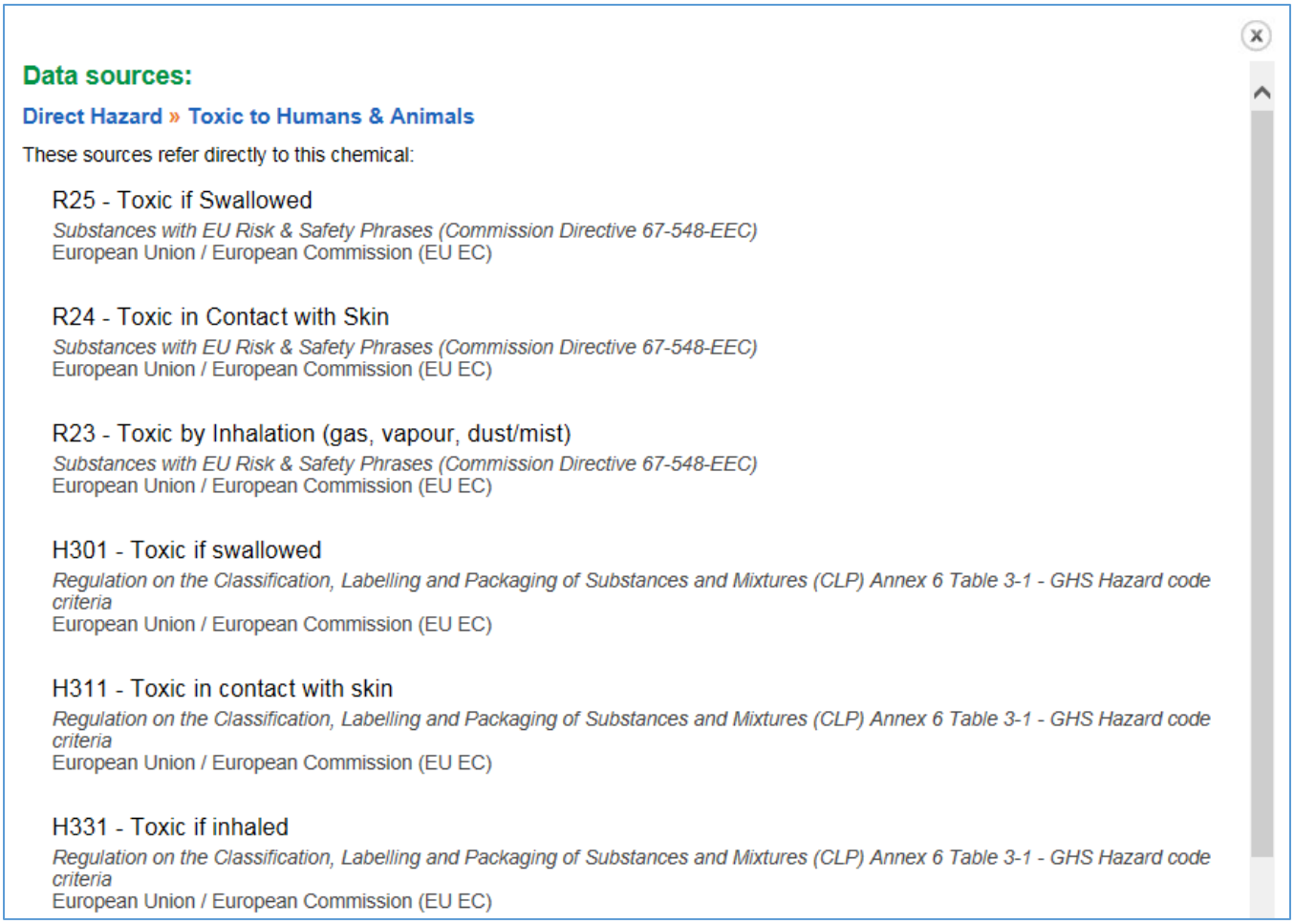


The above list shows just some of the information available. More data are available than shown.

The sources identified above are Step I data sources and the data would be used to help identify the level of acute toxicity concerns associated with formaldehyde. This window can be closed by clicking on the 'X' in the upper right corner.

Similar data are available for chronic concerns associated with formaldehyde:

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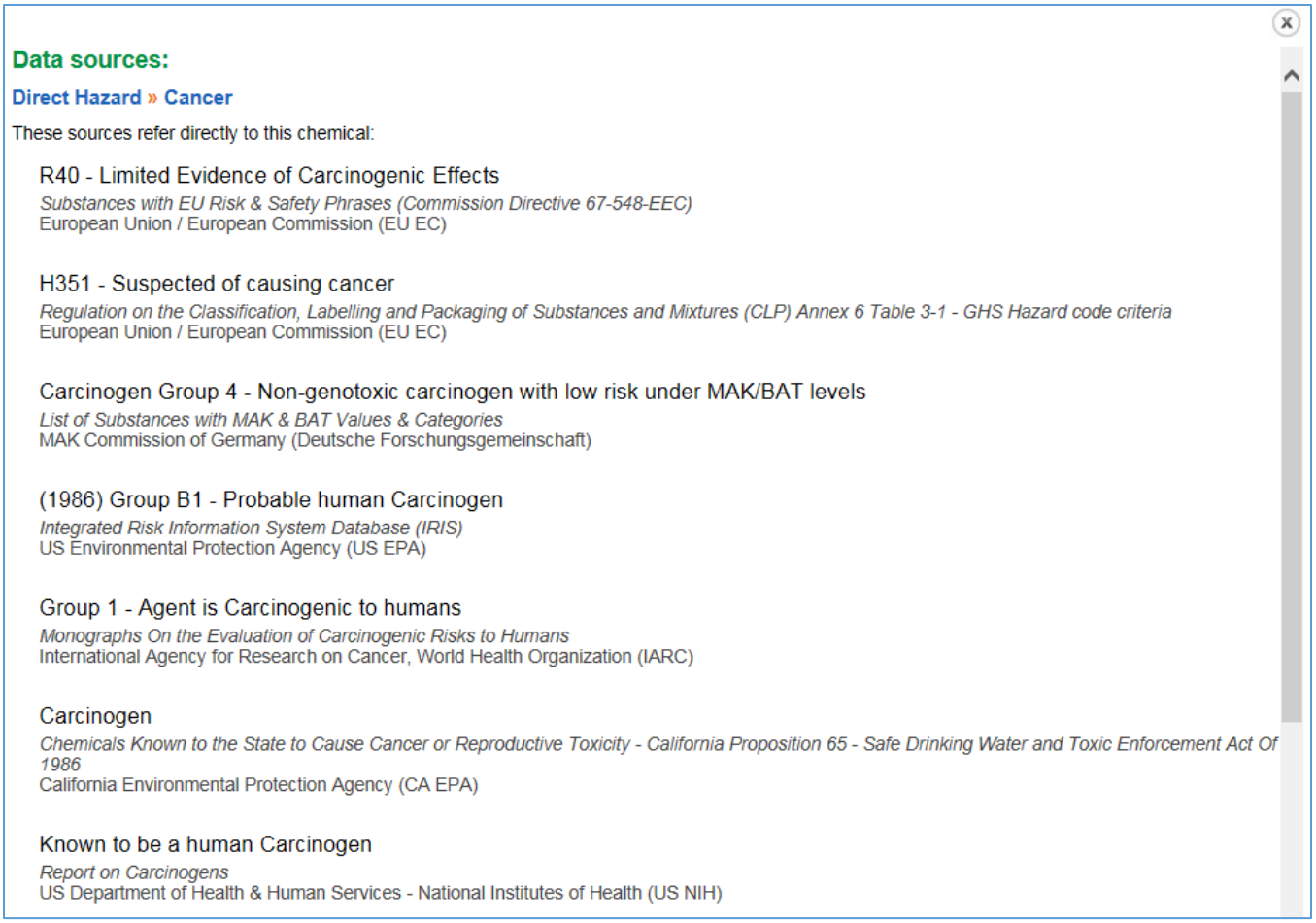


**Data sources:**

**Direct Hazard » Cancer**

These sources refer directly to this chemical:

R40 - Limited Evidence of Carcinogenic Effects
*Substances with EU Risk & Safety Phrases (Commission Directive 67-548-EEC)*
European Union / European Commission (EU EC)

H351 - Suspected of causing cancer
*Regulation on the Classification, Labelling and Packaging of Substances and Mixtures (CLP) Annex 6 Table 3-1 - GHS Hazard code criteria*
European Union / European Commission (EU EC)

Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
*List of Substances with MAK & BAT Values & Categories*
MAK Commission of Germany (Deutsche Forschungsgemeinschaft)

(1986) Group B1 - Probable human Carcinogen
*Integrated Risk Information System Database (IRIS)*
US Environmental Protection Agency (US EPA)

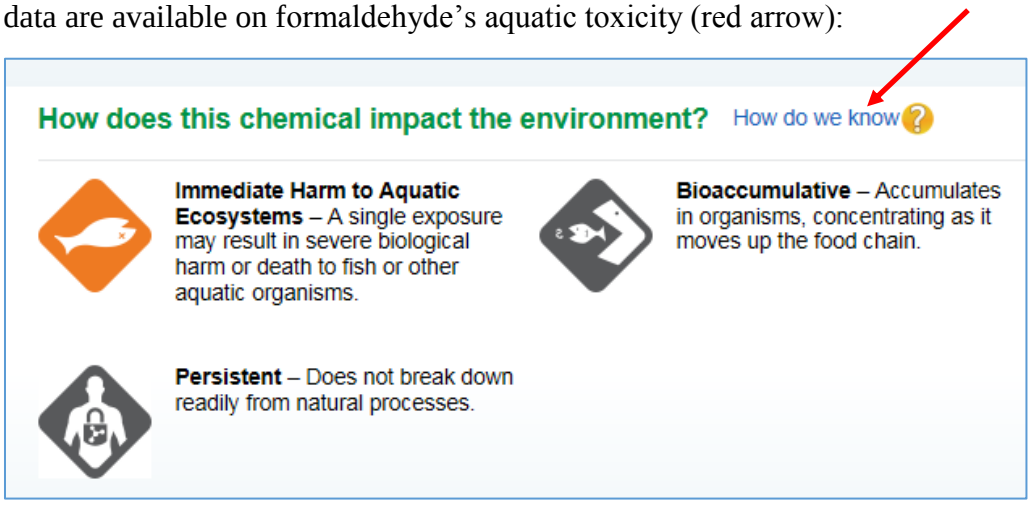
Group 1 - Agent is Carcinogenic to humans
*Monographs On the Evaluation of Carcinogenic Risks to Humans*
International Agency for Research on Cancer, World Health Organization (IARC)

Carcinogen
*Chemicals Known to the State to Cause Cancer or Reproductive Toxicity - California Proposition 65 - Safe Drinking Water and Toxic Enforcement Act Of 1986*
California Environmental Protection Agency (CA EPA)

Known to be a human Carcinogen
*Report on Carcinogens*
US Department of Health & Human Services - National Institutes of Health (US NIH)

This data indicates formaldehyde is a carcinogen and the specific data results can be used in QCAT to identify a level of concern. By using this single source, however, assessors can obtain carcinogenicity data from multiple authoritative sources without the need to visit each source individually.

If the assessor scrolls further down the initial results page for formaldehyde, the following information appears and data are available on formaldehyde's aquatic toxicity (red arrow):



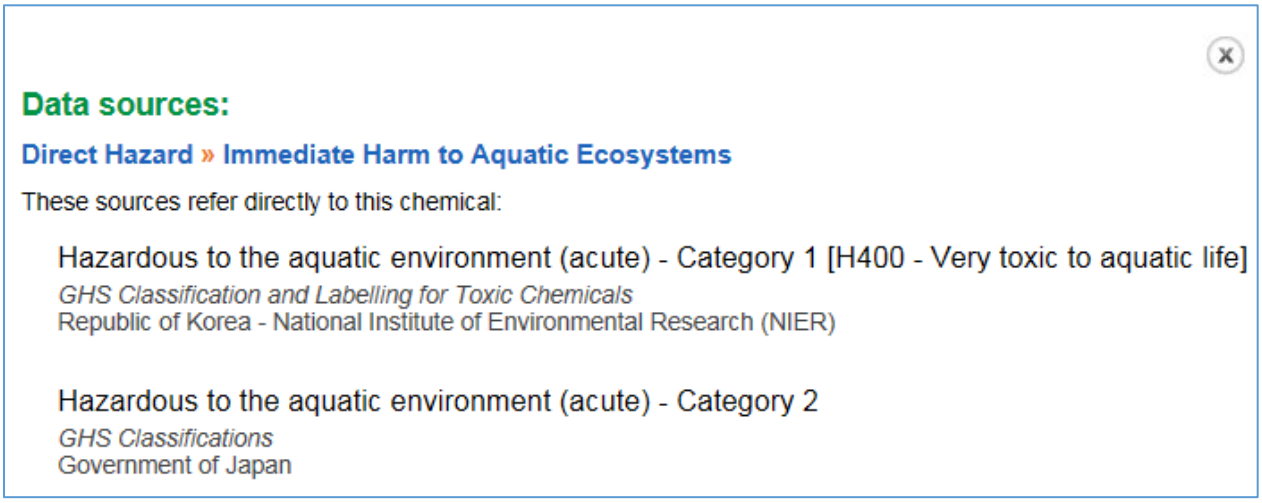
**How does this chemical impact the environment?** How do we know

**Immediate Harm to Aquatic Ecosystems** – A single exposure may result in severe biological harm or death to fish or other aquatic organisms.

**Bioaccumulative** – Accumulates in organisms, concentrating as it moves up the food chain.

**Persistent** – Does not break down readily from natural processes.

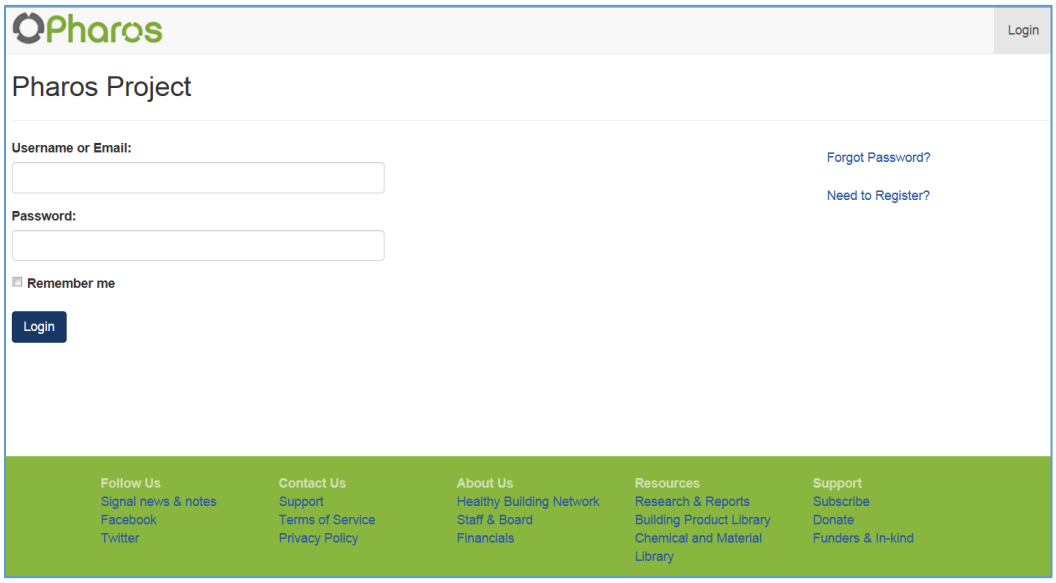
By clicking on the 'How do we know' link, the following window appears:




Information from ChemHAT can be used to assign a level of concern. For example, based upon the information displayed for formaldehyde, it would receive a Grade F based upon the high degree of carcinogenicity. Assessors should make the effort, however, to fill in as many of the hazard endpoints as possible. Although ChemHAT contains most of the Step I authoritative sources, it may not contain all and some of the other, more complete sources listed below may also be reviewed.

## Healthy Building Network's Pharos Database:

Pharos is a subscription site and may not be available to all users. Costs for access, however, are reasonable and access to the information in Pharos might justify the expense. Although Pharos was created primarily to improve the quality of building products, the data in its Chemical and Material Library is useful to QCAT users. Pharos also has the added benefit of being constantly reviewed and updated so the data are maintained and kept current. Users login to Pharos through its main page:



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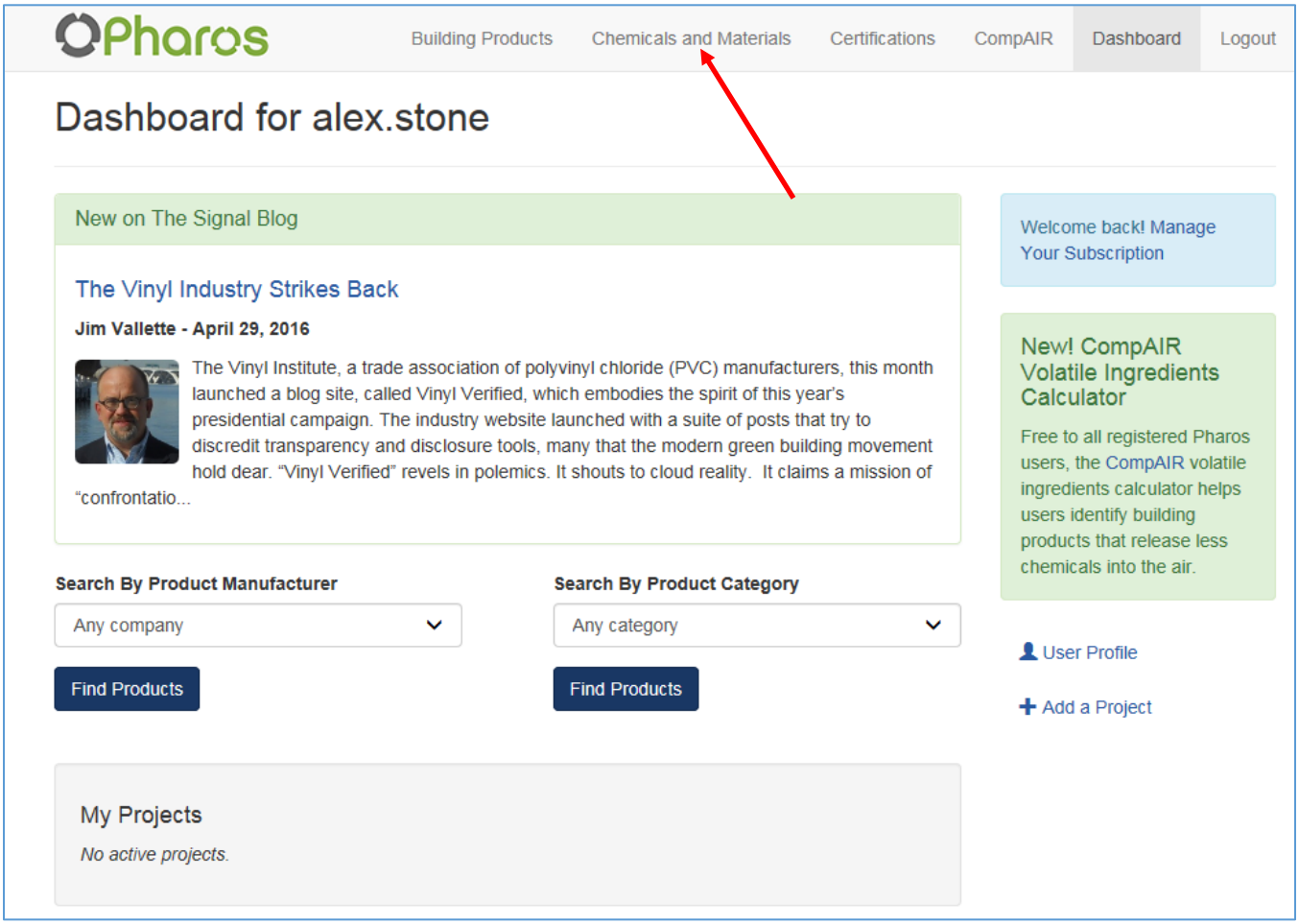
Once the assessor logs in and accesses the site, the following page appears:




Each user has his or her own 'Dashboard', the contents of which might change as HBN posts news and other information for all Pharos users. Clicking on 'Chemicals and Materials' along the top (red arrow), takes you to the following page:

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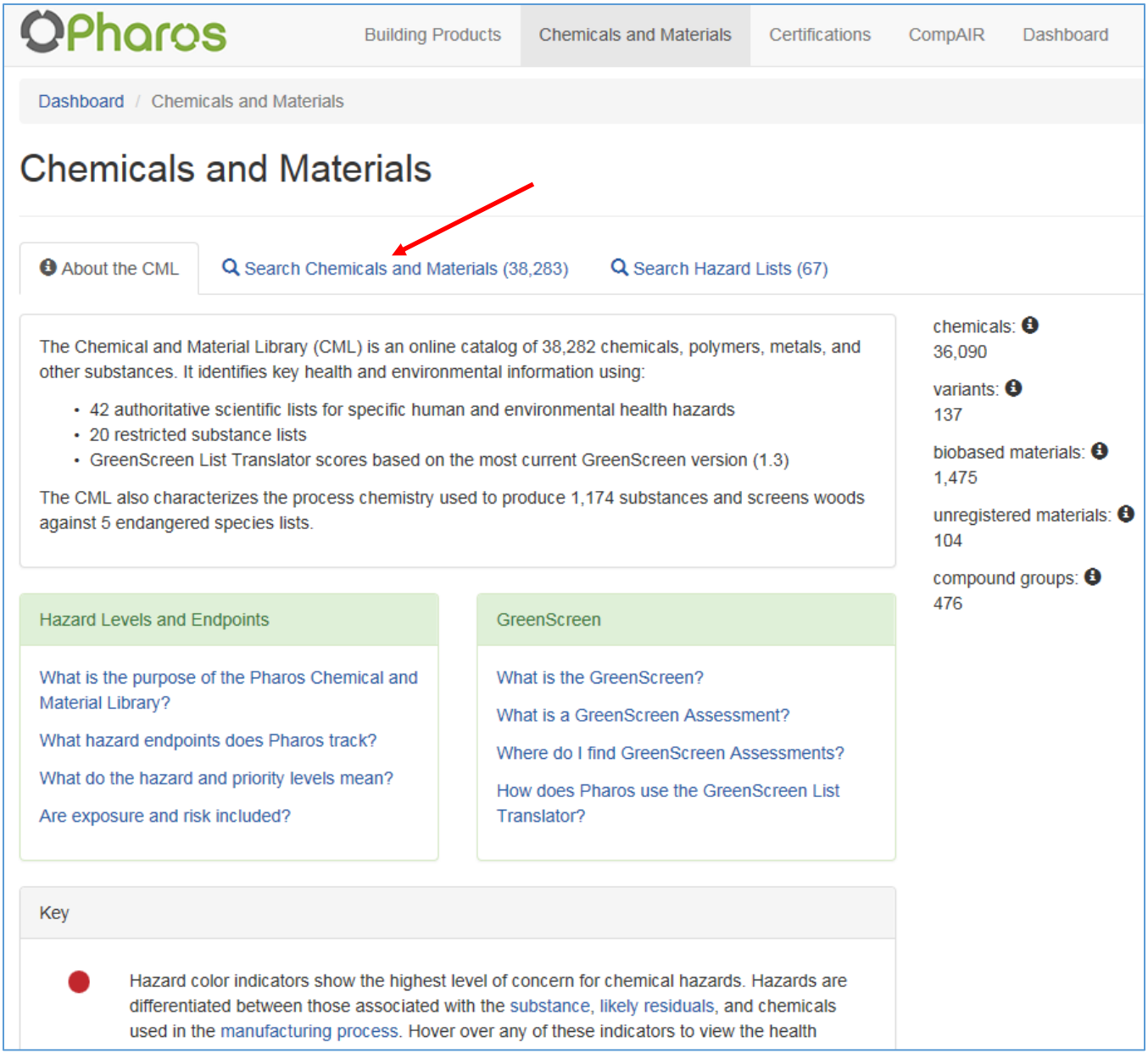
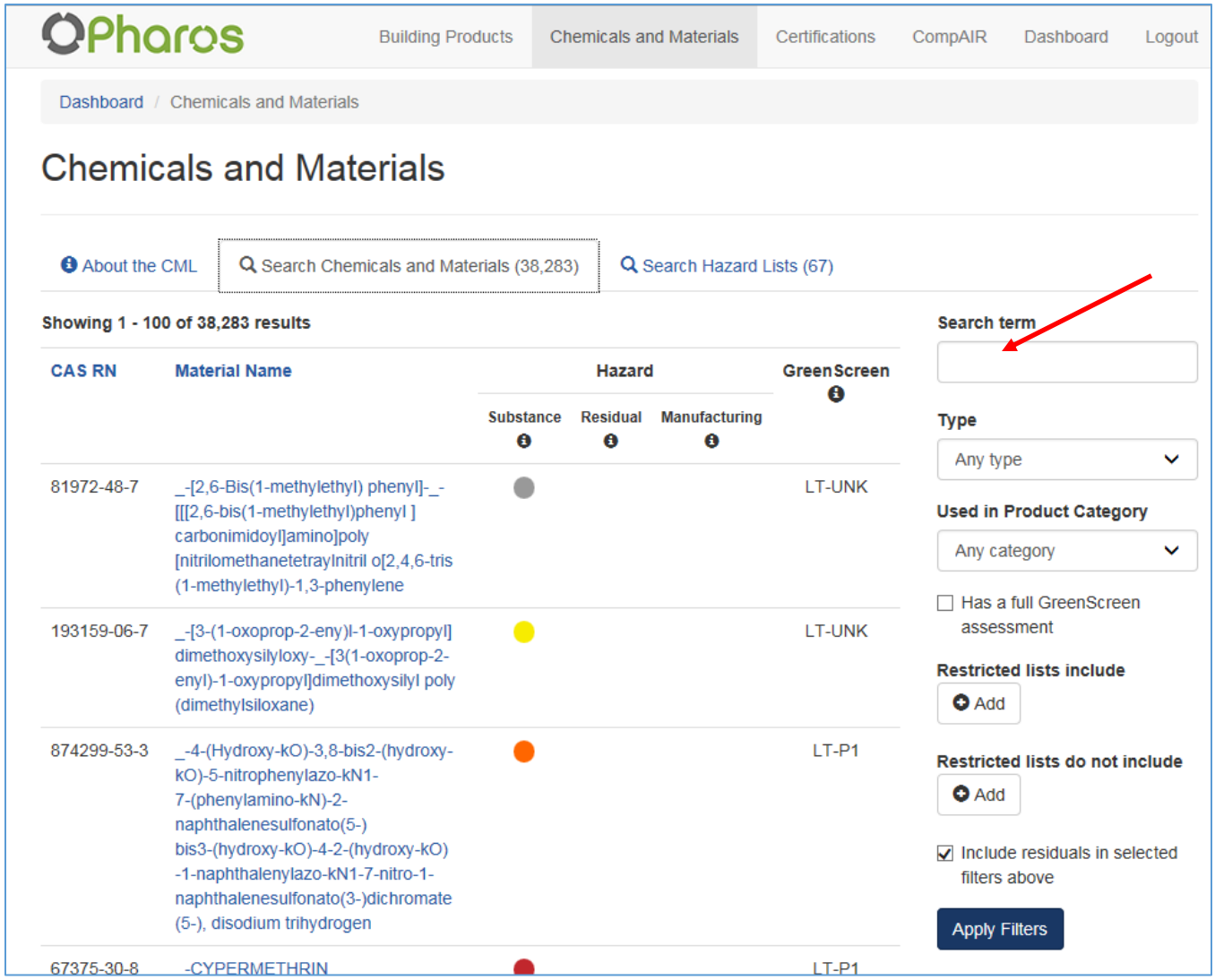



More information is found on the page. The goal, however, is to search for a specific chemical of interest. Clicking on the 'Search Chemicals and Materials' (red arrow) leads you to the following page:




All chemicals in the library are available and the user must now narrow the focus to the chemical of interest. Using formaldehyde as an example again, type the CAS Number ‘50-00-0’ in the box labeled ‘Search term’ (red arrow). The following information appears:

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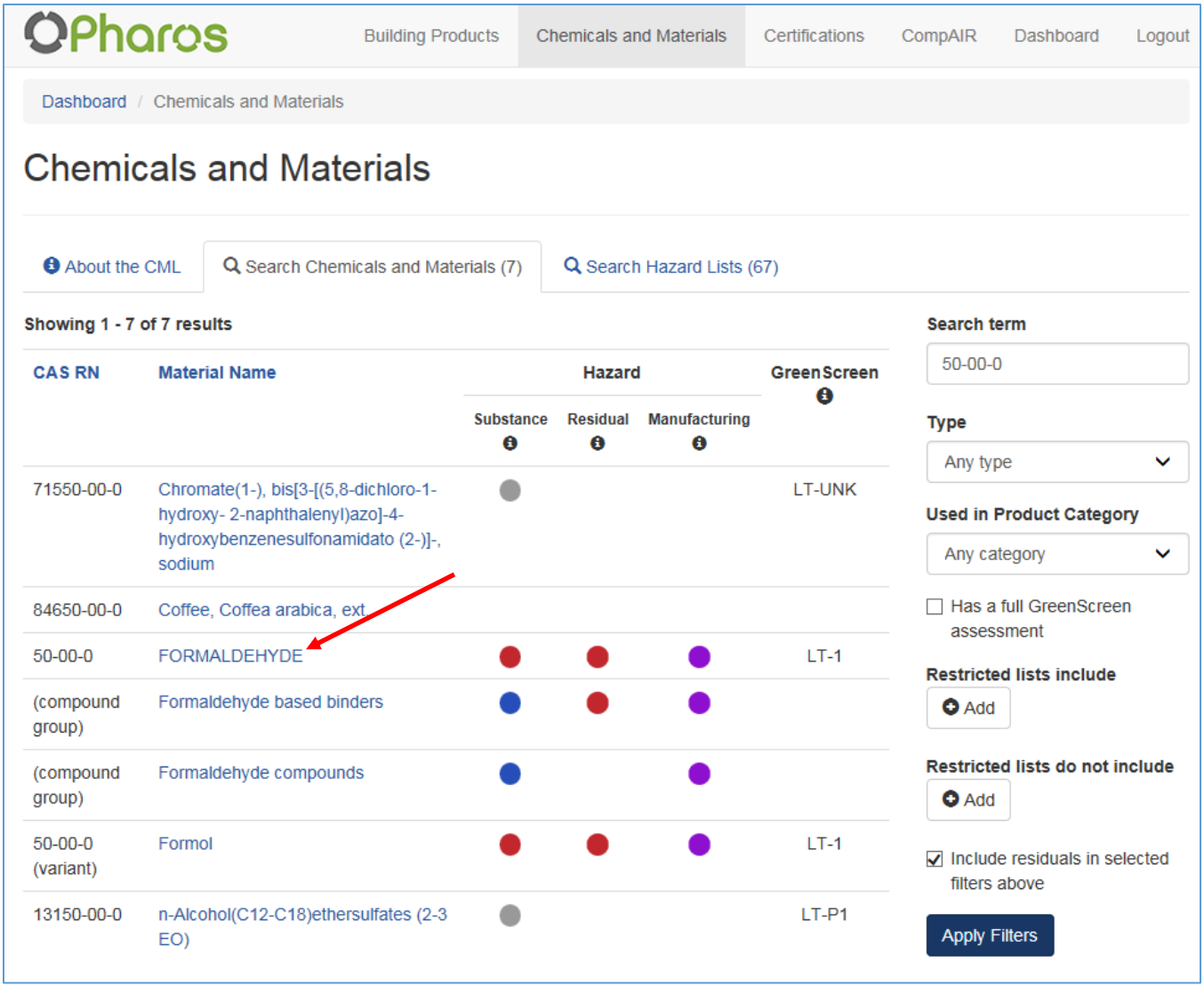


Pharos lists all entries containing ‘50-00-0.’ Clicking on ‘Formaldehyde’ with the correct CAS (red arrow) causes the following to appear:

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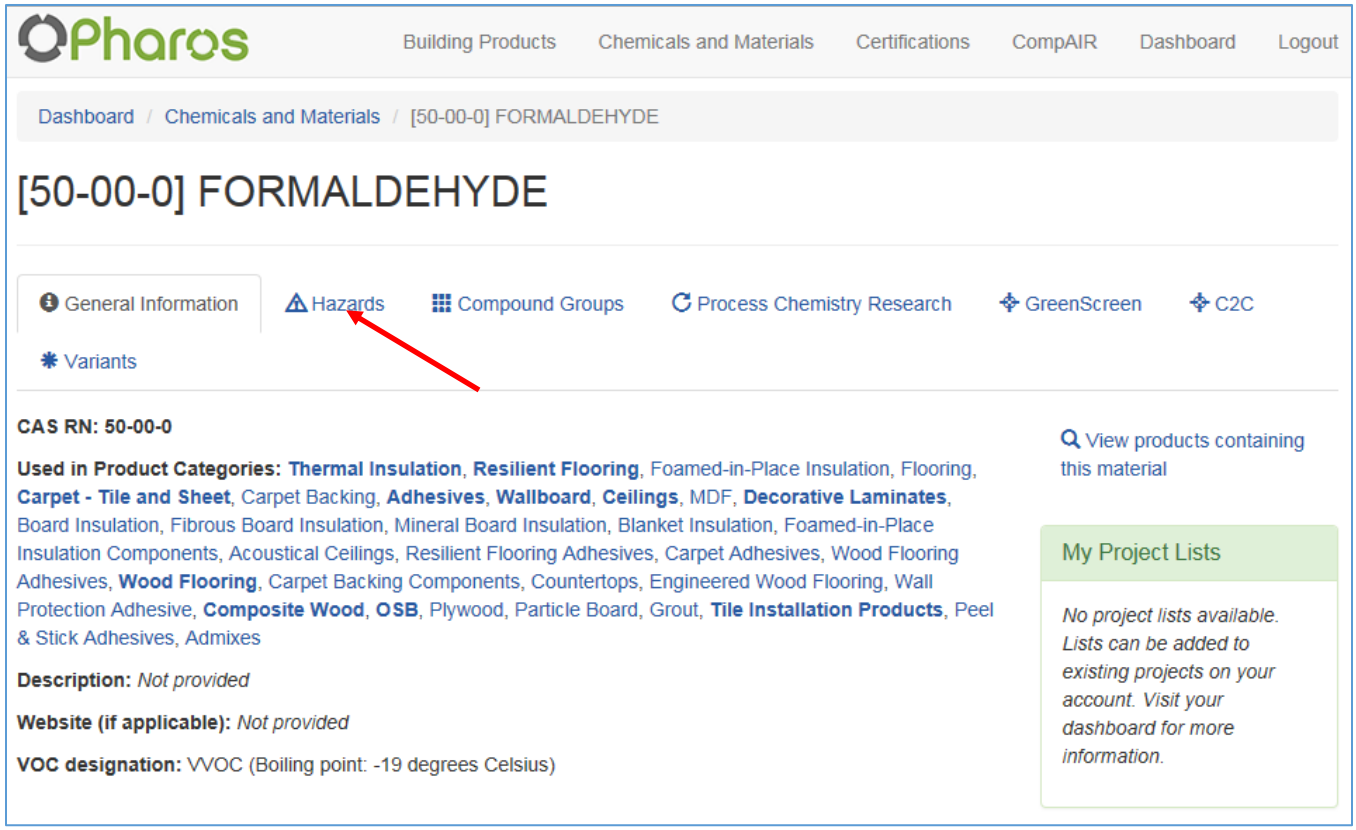


We are not quite there yet but close. Remember that Pharos was actually designed to help the building industry choose safer alternatives. The Hazard library is just one of the services Pharos provides. If, however, you click on the tab 'Hazards' above (red arrow), you'll get to the data you want:

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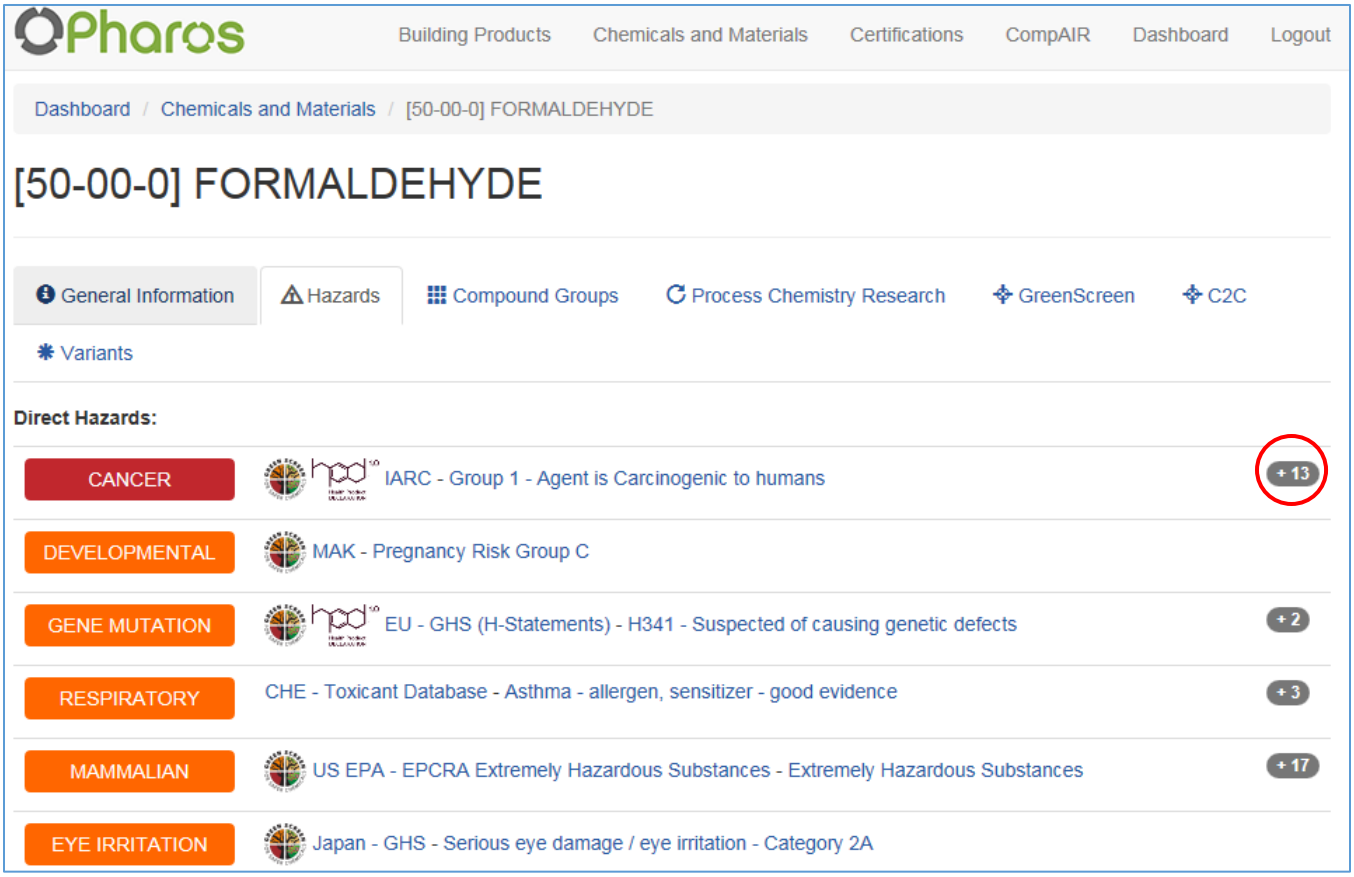


The above is just some of the information found in the database. Pharos is a certified GreenScreen ListTranslator® and the colors shown agree with the level of concern identified in GreenScreen® and used in QCAT. Therefore any hazard endpoint in red is likely to be a higher level of concern than those in orange. Pharos lists one source for each endpoint and identifies additional sources available. The '+13' after 'Cancer' (circled in red) indicates there are an additional 13 authoritative sources that reviewed and provided an opinion on cancer. This information is accessed by clicking on the '+13' and the following appears:

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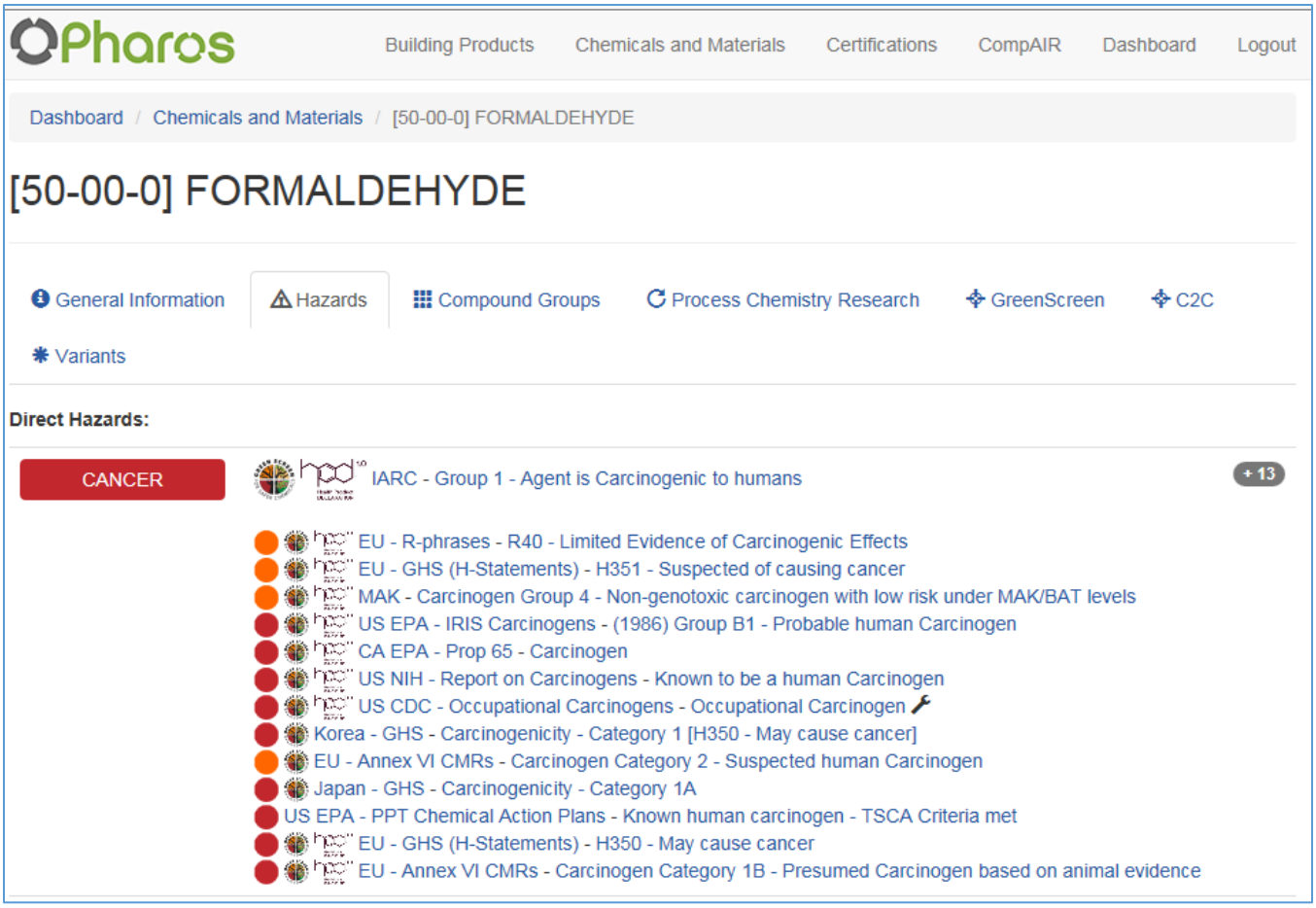


Pharos includes information on several hazard criteria. However, the only one pertinent to a Step I QCAT formaldehyde assessment is 'CANCER' as indicated by the red color. Note the colors used in Pharos align with the color-coding used in QCAT and GS®. Pharos indicates that formaldehyde is a 'Group 1: Agent is carcinogenic to humans' as identified by IARC. This indicates formaldehyde is an 'LT-1' for ListTranslator category 1, which is equivalent to a GS® Benchmark 1 or QCAT Grade F.

If you want more information on each source or are not sure what 'IARC' stands for, you may click on the entry, which takes you to the following:

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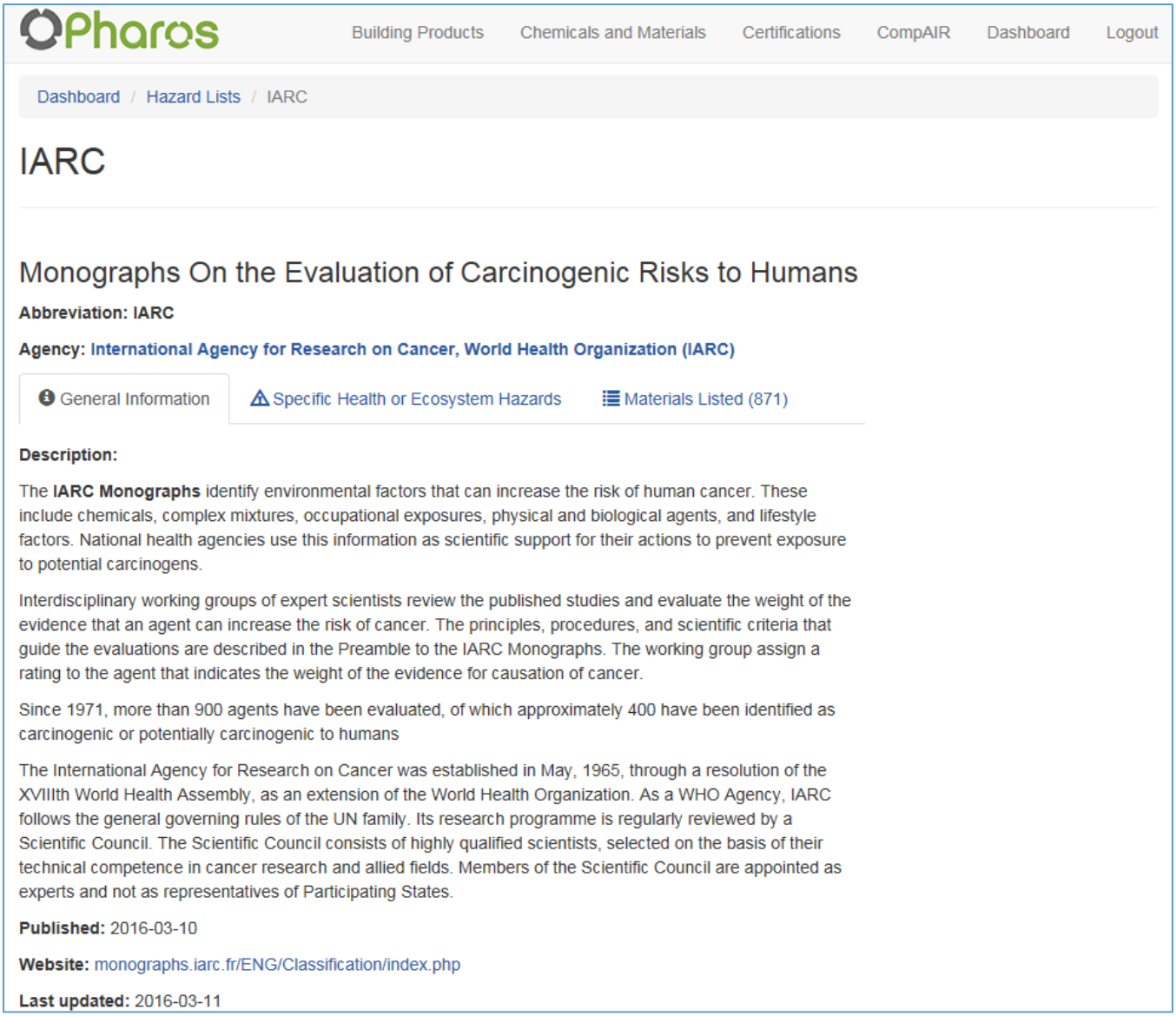


Pharos indicates that IARC stands for the 'International Agency for Research on Cancer by the World Health Organization as represented by their publications 'Monographs on the Evaluation of Carcinogenic Risks to Humans.' If interested, you may also go directly to the IARC site by clicking on the link next to 'Website:'. For example, clicking on this link takes you to the following:

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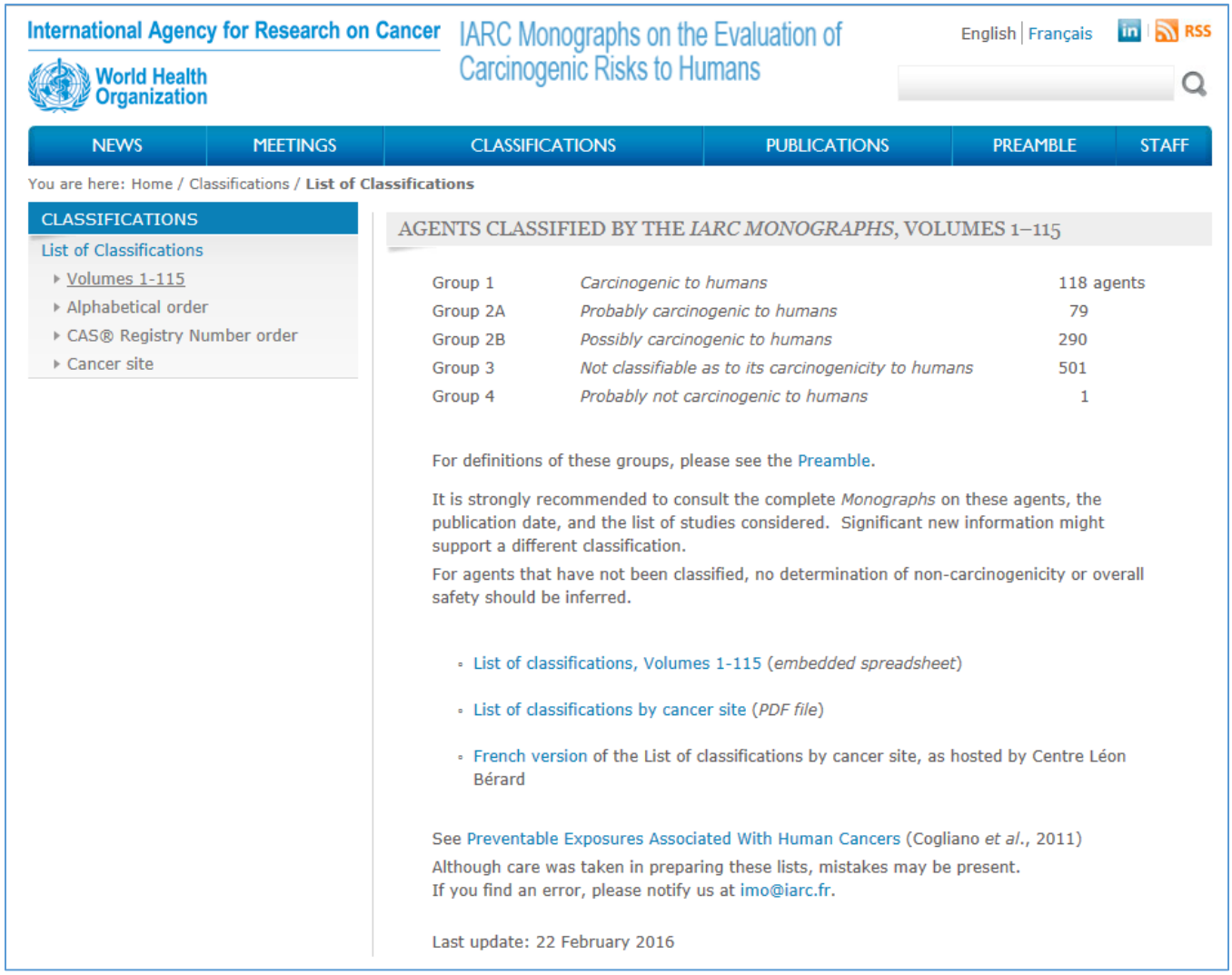


Pharos does an excellent job providing information on each source and what the source's determination means. This information an be easily used by tools such as QCAT and GS to conduct a CHA.

All information available in Pharos on the cancer hazard endpoint is shown. Some information pertinent to a QCAT assessment includes:

1. Group 1: Carcinogenic to humans (IARC)
2. Known to be a human carcinogen (NTP RoC)
3. Group B1 using 1986 Guidelines (IRIS)
4. Carcinogenic (Prop 65)
5. Carcinogen (OSHA)
6. GHS Carcinogenicity Category 1, H350 May cause cancer (Korea NIER)
7. GHS Carcinogenicity Category 1A (Japan METI/MOE)
8. Known human carcinogen (US EPA)

This data can be used to identify the level of concern for carcinogenicity. According to the information in Appendix 8, this information causes cancer and needs to be assigned a level of 'H.' The QCAT user should note this information in the assessment for formaldehyde and indicate where the information was obtained, i.e., the Pharos database accessed on a specific date.

> Note that Pharos includes data from sources used in the GS® but not in QCAT. This information is meaningful to its target audience, i.e., suppliers of building materials. Although it is tempting to include this information in a QCAT assessment, it is beyond the QCAT's scope and should be reserved for a GS® assessment.